

St. Cloud Tribune, 1, no. 16 (December 23, 1909).

CASSAVA AND ARROWROOT.

Two Prolific Plants Which Promise Great Profits in the Coming Industrial Development of Florida.

By Ezra J. Stewart.

Cassava, a species of milkweed, is cultivated for its starchy roots, which are the only valuable parts of the plant. These roots grow in clusters which often weight from 15 to 30 pounds. Single roots two years old have been known to weigh 150 pounds each. These roots are ordinarily from two to four feet in length, tho they sometimes grow nine or more feet long, being one to three inches in diameter.

A native of Brazil, cassava is grown extensively in South American countries, where it is known as mandioca; it is, in fact, a staple article of human food thruout the Tropics. Being a starch-producing plant, its use for the manufacture of starch, tapioca, glucose and similar products make it a profitable field crop. As feed for horses, mules, cattle, hogs and poultry, cassava contains a high percentage of fattening value. The roots can be ground and dried so as to facilitate the storing or shipping or large quantities of fe[ed?] a[t any?] season of the year.

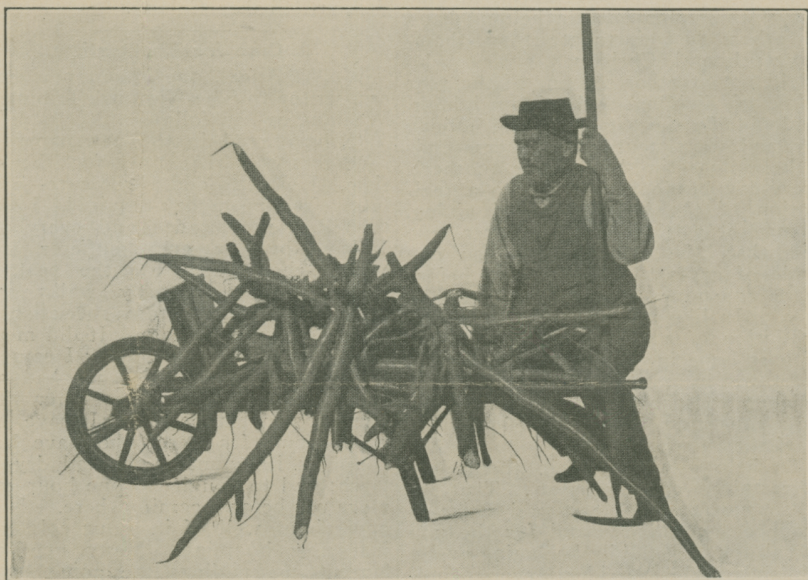
There are two kinds of cassava, the bitter and the sweet, but in reality the difference is slight. Bitter cassava is the kind most commonly grown in the Tropics, where it thrives wonderfully. Some varieties take years to reach full maturity. It contains a high percentage of hydrocyanic acid and must be boiled to expel the acid before being suitable for food. The sweet cassava is nonpoisonous, and is the only kind grown in this country, of which we have from three to five varieties. In South America more than 40 varieties of sweet cassava are cultivated.

In Florida.

Grown in Florida for perhaps a half century or more, it is esteemed by many farmers an ideal crop for our light, sandy soils. Some practice planting cassava in orchards, where, of course, it needs liberal fertilization. The seeds, resembling those of the castor bean, are not used for propagating the plant, but, as in the case of sugarcane, the stalks or canes are planted for this purpose. The seed canes are cut into pieces four to eight inches long, each containing five to seven eyes. These are dropped lengthwise into rows, which are about five feet apart, and covered with earth three or four inches deep. The soil should then be well firmed to prevent drying out. As



A GROWING CASSAVA PLANT.



SEVEN CASSAVA ROOTS—WEIGHT 119½ POUNDS.

Yields from 5 to 15 tons to the acre. Prolific in glucose and starch, and has many domestic uses.

these stalks are unable to stand anything but a light frost, they should be cut by the middle of December in this latitude. By planting immediately after cutting the necessity for storing the stalks is avoided; besides, they are then fresh and full of vitality, insuring a better stand than when kept over to dry out or mould and spoil. When planted in December it will usually come up about the first of February, and even if cut down by frost will sprout again without apparent diminution of energy. Spring planting generally means dry weather with consequent risk of a small stand.

If it is found necessary to store the seed cane for Spring planting it may either be trenched in a deep furrow on ground which is high and dry or placed in a specially-prepared house with sides about three feet high, where the canes are stood on end, the tops being covered with straw and the sides of the house banked with earth. Canes should be fully matured before being cut for seed. Afterward care should be taken to protect them from too much moisture.

Easily Cultivated.

Early cultivation is unnecessary beyond keeping the weeds down and providing a dust mulch, the same as in the cultivation of corn or potatoes. Later cultivation should be shallow, as the roots run close to the top of the ground, and should not be lacerated. On land fairly free from weeds two cultivations is often all that is necessary, as the plants grow rapidly and soon form a dense shade sufficient to smother the grass and prevent the growth of weeds. Like bananas, the cassava plant needs less care than either cotton or sugarcane, and is estimated by some planters to possess about half the feeding value of corn.

At one time successful experiments were conducted in cassava culture on high pine land (sand) and also on wet muck land at the Government Experiment Station at Runnymede, near Narcoossee. These experiments proved conclusively that this tuber can be produced very profitably at St. Cloud and in the neighboring districts. In fact, it can be raised with safety and profit all over the Florida peninsula.

Cassava can be made to yield from five to 15 tons per acre under favorable conditions, but on very light, sandy soils, where no fertilizers are used, the yield may not exceed two to three tons to the acre. Muck lands sometimes produce heavy crops, altho not of such good quality as that grown on fertilized sand land. A fertilizer strong in nitrogen and potash is needed for this crop when grown on pine lands. Blood, bone and potash

sown broadcast and harrowed in at time of planting would be a good starter. Then nitrate of soda would make the plants jump if distributed judiciously at different times along thru the Summer.

A Large Producer.

Twice as much cassava can be grown on an acre of land as either sweet or Irish potatoes, and with less trouble. The roots are generally left in the ground until needed for use, the same as sweet potatoes, and need no preparation except cutting into small pieces before being fed to stock. A better plan is to crush the tubers, which are brittle, with mallet or hammer; better because some greedy animals are liable to choke themselves on pieces which are cut or sliced.

Where choking occurs the animal should be thrown to the ground and held down while someone runs their hand and arm down its throat, thus removing the obstruction. This can generally be accomplished without much trouble or loss of time.

All kinds of stock are fond of this carbonaceous root, it being especially valuable as food for milch cows, stimulating a flow of milk without adding the obnoxious flavor which usually accompanies the feeding of turnips, ensilage, cottonseed meal and the like. Fed with or without grains, this valuable dairy food can be used liberally without danger of injury to milch cows, while for fattening purposes it is well calculated to keep stock in prime condition without the use of grains.

Hogs are sometimes fattened on a ration of corn, sweet potatoes, and cassava, and will almost invariably turn from corn to feed on cassava after becoming accustomed to the latter. Experiments show that cassava is much more valuable for hog feed than sweet potatoes, and as hogs are unlikely to become choked from eating whole roots, it is a common practice to turn them loose in the field, where they can help themselves.

This is not, however, the most economical method of feeding, as roots that are pulled out of the ground and left soon decay; but after the main crop is gathered there are always more or less pieces of roots remaining in the ground which hogs can very profitably harvest.

In Florida cassava and sweet potatoes, two of our chief sources of carbohydrates, are thought by some to be very valuable when fed alone or in combination to growing pigs. Experiments, however, have proved that this food is too carbonaceous for young pigs, and should be fed with some such nitrogenous food as cowpeas, velvet beans, peanuts or shorts. Hogs

fed on cassava exclusively fatten very rapidly at the expense of growth and quality of pork. After the animals have reached a considerable size they may be fed large quantities of cassava alone with satisfactory results, altho small rations of corn fed a few weeks before butchering will add much to the quality and firmness of the pork. It is estimated by some cassava enthusiasts that it is worth about \$16 per ton for fattening beeves and about double this amount for hog feed.

For Starch and Meal.

For many years cassava has been employed to some extent for making starch for domestic use, but it was not until lately that the manufacture of starch on a commercial scale was undertaken in Florida. There are now factories in various sections of the State which do a profitable business in this line. At the Shaker Colony in Osceola County an excellent article of tapioca as well as starch has been successfully prepared for home use.

For domestic use cassava is sometimes sliced thin, dried in the sun, then ground in a coffee or spice mill. This farina or meal makes good muffins, biscuits, or battercakes when used in combination with eggs and milk. Boiled, sliced, and baked with sugar and spice, it rivals the "sugared sweet potato." Custards, fritters and puddings made of grated cassava are O. K. Grated cassava is sometimes used on the table the same as plain boiled rice, altho not so palatable as the latter.

On account of its deficiency in nitrogenous matter, cassava cannot be expected to take the place of cereal flour for domestic use; nevertheless, the majority of Brazilians use it extensively for bread, simply grating the root and adding a little salt and soda.

It is said that fully 30 per cent of the weight of the fresh root can be obtained as glucose, and when properly extracted, from 20 to 25 per cent of high-grade starch similar to that made from maize. Next to sugarcane and oranges cassava could probably be made one of our best money crops in Florida, giving quick returns, especially, when fed to stock or dairy cows. It makes excellent bread when mixed half and half with wheat flour.

Arrowroot.

This nutritious root, grown so successfully on the Bermuda Islands for many years, is well adapted for our Florida sand lands, and likewise for our rich muck lands. Like cassava it is easy to raise, and like sweet potatoes every portion of the plant is good for something. The tops can very profitably

be fed to poultry, while hogs will tumble over each other in their efforts to reach the arrowroot pile. While cassava keeps good in the earth only when undisturbed, arrowroot will remain sound and sweet for a long time, even after hogs have chewed a portion of the root.

The arrowroot plant, with its slender, branching stalks and long, green leaves, makes a handsome field crop, being also well adapted for resisting droughts.

Easily digested, arrowroot flour has long since found favor as a wholesome, delicate human food. Its mollifying properties make it especially valuable for infants and for use in the sick-room. Who has not beard of arrowroot pap? Splendid puddings and custards are evolved from this root, while it also produces the finest flavored tapioca known to commerce.

In making starch and tapioca, the arrowroot, after being thoroly washed and peeled, is reduced to a pulp. It is then dropped into water and cleaned of all fibers by being strained thru sieves, the starch eventually settling to the bottom. By placing the starch on hot metallic plates it is converted into tapioca globules or balls. The arrowroot is dried in the sun or in drying houses, and is exported in tin cases, barrels or boxes, which are carefully sealed.



CHICKEN YARD IN THE SHAKER COLONY.